

What is claimed is:

1.           An optical network which is formed by a  
2 plurality of optical network transmission apparatuses  
3 (11 - 15) and a plurality of transmission lines (21 -  
4 25) that connect the optical network transmission  
5 apparatuses, characterized in that  
6           each optical network transmission apparatus  
7 comprises  
8           advertisement means (121) for autonomously  
9 advertising a usable wavelength in a transmission line  
10 connected to the apparatus, and  
11           collection means (122) for autonomously  
12 collecting a usable wavelength in a transmission line  
13 that is advertised by another apparatus.

2.           A network according to claim 1, wherein said  
2 advertisement means comprises notification means for  
3 notifying another apparatus adjacent to the apparatus of  
4 the usable wavelength in the transmission line connected  
5 to the apparatus and the usable wavelength in the  
6 transmission line that is collected by said collection  
7 means.

3.           A network according to claim 1, wherein the  
2 optical network transmission apparatus further comprises  
3 route calculation means (113) for calculating a route of

4 an optical path on the basis of the usable wavelength in  
5 the transmission line connected to the apparatus and the  
6 usable wavelength in the transmission line that is  
7 collected by said collection means.

4. A network according to claim 1, wherein the  
2 optical network transmission apparatus comprises  
3 wavelength management means (111) for managing  
4 the usable wavelength in the transmission line connected  
5 to the apparatus, and  
6 wavelength update means (114) for updating the  
7 usable wavelength managed by said usable wavelength  
8 management means when an optical path is set in the  
9 transmission line connected to the apparatus.

5. An optical network transmission apparatus (11)  
2 in which the apparatus (11) and other adjacent  
3 apparatuses (12, 15) are connected by transmission lines  
4 (21, 25), characterized by comprising:  
5 advertisement means (121) for autonomously  
6 advertising usable wavelengths in the transmission lines  
7 connected to the apparatus; and  
8 collection means (122) for autonomously  
9 collecting usable wavelengths in transmission lines (22,  
10 24) that are advertised by said other apparatuses.

6. An apparatus according to claim 5, wherein

2 said advertisement means comprises notification means  
3 for notifying said other apparatuses of the usable  
4 wavelengths in the transmission lines connected to the  
5 apparatus and the usable wavelengths in the transmission  
6 lines that are collected by said collection means.

7. An apparatus according to claim 5, further  
2 comprising route calculation means (113) for calculating  
3 a route of an optical path on the basis of the usable  
4 wavelengths in the transmission lines connected to the  
5 apparatus and the usable wavelengths in the transmission  
6 lines that are collected by said collection means.

8. An apparatus according to claim 1, further  
2 comprising:  
3 wavelength management means (111) for managing  
4 the usable wavelengths in the transmission lines  
5 connected to the apparatus; and  
6 wavelength update means (114) for updating the  
7 usable wavelengths managed by said usable wavelength  
8 management means when an optical path is set in the  
9 transmission lines connected to the apparatus.

9. A distributed routing control method in an  
2 optical network which is formed by a plurality of  
3 optical network transmission apparatuses (11 - 15) and a  
4 plurality of transmission lines (21 - 25) that connect

5 the optical network transmission apparatuses,  
6 characterized by comprising the step (S2) of causing  
7 each optical network transmission apparatus to  
8 autonomously advertise a usable wavelength in a  
9 transmission line connected to the apparatus, and  
10 autonomously collect a usable wavelength in a  
11 transmission line that is advertised by another  
12 apparatus.

10. A method according to claim 9, wherein the  
2 advertisement step comprises the step of notifying  
3 another apparatus adjacent to the apparatus of the  
4 usable wavelength in the transmission line connected to  
5 the apparatus and the collected usable wavelength in the  
6 transmission line.

11. A method according to claim 9, further  
2 comprising the step (S3, S4) of calculating a route of  
3 an optical path on the basis of the usable wavelength in  
4 the transmission line connected to the apparatus and the  
5 collected usable wavelength in the transmission line.

12. A method according to claim 9, further  
2 comprising:  
3 the step (S5) of setting an optical path along  
4 a route obtained by route calculation; and  
5 the step (S6) of updating the usable

6 wavelength in the transmission line connected to the  
7 apparatus.

13.           A machine-readable recording medium which  
2 records a program of a distributed routing control  
3 method in an optical network which is formed by a  
4 plurality of optical network transmission apparatuses  
5 (11 - 15) and a plurality of transmission lines (21 -  
6 25) that connect the optical network transmission  
7 apparatuses, characterized in that the recording medium  
8 records a program for executing a process (S2) of  
9 autonomously advertising a usable wavelength in a  
10 transmission line connected to each apparatus, and  
11 autonomously collecting a usable wavelength in a  
12 transmission line that is advertised by another  
13 apparatus.

14.           A medium according to claim 13, wherein the  
2 program executes, as the advertisement process, a  
3 process of notifying another apparatus adjacent to the  
4 apparatus of the usable wavelength in the transmission  
5 line connected to the apparatus and the collected usable  
6 wavelength in the transmission line.

15.           A medium according to claim 13, wherein the  
2 program further executes a process (S3, S4) of  
3 calculating a route of an optical path on the basis of

4 the usable wavelength in the transmission line connected  
5 to the apparatus and the collected usable wavelength in  
6 the transmission line.

16. A medium according to claim 13, wherein the  
2 program further executes  
3 a process (S5) of setting an optical path  
4 along a route obtained by route calculation, and  
5 a process (S6) of updating the usable  
6 wavelength in the transmission line connected to the  
7 apparatus.